

CLAIMS

What is claimed is:

- 1 1. A system for detecting a downhole condition in a wellbore during a non-drilling wellbore operation, the system comprising:
 - 3 a tool string to be disposed within a wellbore;
 - 4 a workpiece within the tool string for performing a non-drilling wellbore operation within the wellbore; and
 - 6 a condition sensing tool within the tool string for sensing a downhole condition.
- 1 2. The system of claim 1 wherein the workpiece comprises a fishing device.
- 1 3. The system of claim 1 wherein the workpiece comprises a cutting tool.
- 1 4. The system of claim 3 wherein the cutting tool comprises an underreamer.
- 1 5. The system of claim 3 wherein the cutting tool comprises a casing cutter.
- 1 6. The system of claim 1 wherein the downhole condition is a condition from the set consisting essentially of torque, weight, tool string compression, tool string tension, speed of tool string rotation, vibration, and direction of tool string rotation.
- 1 7. The system of claim 1 wherein the condition sensing tool of the system comprises:
 - 2 an outer housing defining a sensor section therein; and
 - 3 at least one sensor retained within the sensor section for detection of a downhole condition.

1 8. The system of claim 7 wherein the condition sensing tool further comprises a processing
2 section for receiving data relating to the downhole condition and transmitting the data to a remote
3 receiver.

1 9. The system of claim 7 wherein the condition sensing tool further comprises a processing
2 section for receiving data relating to the downhole condition and storing the data.

1 10. The system of claim 1 further comprising a power section.

1 11. A condition sensing tool for use within a wellbore during a non-drilling operation to detect at
2 least one downhole condition within the wellbore, the condition sensing tool comprising:
3 an outer housing defining an axial fluid flowbore therethrough;
4 a sensor section defined within the housing; and
5 at least one sensor for detecting at least one non-drilling downhole condition from the set of
6 conditions consisting essentially of torque, weight, tool string compression, tool string tension, speed
7 of tool string rotation, vibration, and direction of tool string rotation.

1 12. The condition sensing tool of claim 11 further comprising a power section within the housing
2 for supplying power to the sensor section.

1 13. The condition sensing tool of claim 11 further comprising a processing section for receiving
2 data relating to the downhole condition and transmitting the data to a remote receiver.

1 14. A method of performing a non-drilling downhole wellbore operation comprising:
2 integrating a workpiece and a condition sensing tool into a tool string;
3 disposing the tool string into a wellbore;

4 actuating the workpiece to conduct a non-drilling downhole operation; and
5 detecting at least one downhole condition with the condition sensing tool.

1 15. The method of claim 14 further comprising the step of transmitting information indicative of
2 the downhole condition to a remote location.

1 16. The method of claim 14 further comprising the step of storing information indicative of the
2 downhole condition within a processing section of the condition sensing tool.

1 17. The method of claim 14 wherein
2 a) the workpiece comprises a fishing tool for engaging a stuck member within a
3 wellbore;
4 b) the non-drilling downhole operation comprises a fishing operation to remove a stuck
5 member from the wellbore; and
6 c) the condition sensing tool detects weight and torque.

1 18. The method of claim 14 wherein:
2 a) the workpiece comprises an anchor latch;
3 b) the non-drilling downhole operation comprises unthreading of a threaded connection
4 within the wellbore; and
5 c) the condition sensing tool detects tool string compression and tool string tension.

1 19. The method of claim 14 wherein:
2 a) the workpiece comprises a casing cutter;
3 b) the non-drilling downhole operation comprises a casing cutting operation, and
4 c) the condition sensing tool detects speed and direction of rotation of the tool string.

- 1 20. The method of claim 14 wherein:
- 2 a) the workpiece comprises an underreamer;
- 3 b) the non-drilling downhole operation comprises an underreaming operation, and
- 4 c) the condition-sensing tool detects torque.
- 1 21. The method of claim 20 wherein the condition sensing tool also detects weight, speed of rotation, and direction of rotation.
- 1 22. The method of claim 14 wherein:
- 2 a) the workpiece comprises a packer;
- 3 b) the non-drilling downhole operation comprises retrieval of the packer from a set position within the wellbore; and
- 5 c) the condition-sensing tool detects torque and weight.
- 1 23. The method of claim 14 wherein:
- 2 a) the workpiece comprises a pilot mill;
- 3 b) the non-drilling downhole operation comprises milling away by the pilot mill of a portion of a tubular member within the wellbore; and
- 5 c) the condition sensing tool detects at least some of the downhole conditions from the set of conditions consisting essentially of torque, direction of rotation, speed of rotation, weight, tool string compression, and tool string tension.
- 1 24. The method of claim 14 wherein:
- 2 a) the workpiece comprises a washover tool;
- 3 b) the non-drilling downhole operation comprises a washover operation for cutting away portions of a formation surrounding a stuck object within the wellbore; and

5 c) the condition sensing tool detects torque.

1 25. The method of claim 24 wherein the condition sensing tool further detects speed and
2 direction of rotation.